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DRAWINGS ATTACHED

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(54) IMPROVEMENTS IN OR RELATING TO WOOD PRIMER COMPOSITIONS

(71) We, ANDRE HELMS and HERMANN AREND HELMS, both of German nationality, of Postfach 330, 28 Bremen, and trading as BERGOLIN LACK- UND FARBENFABRIKEN ANDRE HELMS K.G., do hereby declare the invention for which we pray that a patent may be granted to us and the manner in which it is to be performed to be particularly described in and by the following statement:—

This invention relates to wood primer compositions for preparing the surface of timber, veneered timber, and like porous materials, particularly sheets of hardboard and presswood, to received lacquer and other covering layers.

It is known to use resin-impregnated papers or pure plastics films or sheets or foils or laminates, preferably on a melamine resin basis, as a priming for timber materials to seal the very porous timber base. The resin-impregnated papers are stuck to the timber base, whereas plastics, foils and laminates are pressed onto the timber base to provide a hermetic surface serving as a basis for further surface treatment of the material. A relatively complex apparatus is required to stick on the resin-impregnated papers and to press on plastics foils. Also, appropriate adhesives which require relatively high pressures or temperatures must be used to bond the stuck-on layer to the timber material. Another disadvantage of a paper coating is that the paper often tears and the necessary after-treatment of the paper coating by grinding, breaks up the fibre structure of the paper coating. A disadvantage in the case of press-on plastics films or foils is a residual thermoplasticity.

High-filling pigmented synthetic resin compositions are also known as primers for timber and timber-like substances and are usually applied by rolling on to the timber or the like base. These compositions are cured by the cross-linking of two ingredients or by oxidation drying to form high-molecular-weight plastics-like film. Producing a priming layer of this kind on timber and timber-like substances takes much longer than the application of papers, plastic foils, sheets, films or the like.

It is an object of the invention to provide an improved wood primer composition which is relatively inexpensive and is relatively simple to use.

According to one aspect of the invention there is provided a wood primer composition which comprises a photocatalytically curable liquid synthetic resin (as hereinafter defined) having added thereto one or more finely divided fillers effectively translucent to electromagnetic radiation of the wavelength required to catalyse curing of the resin. Advantageously, the wood primer composition comprises a photocatalytically curable liquid synthetic resin (as hereinafter defined) having added thereto one or more finely divided filters selected from the inorganic compounds silicon dioxide, calcium carbonate and barium sulphate, and the minerals talc, dolomite, kaolin and asbestos, the primer comprising from 10% to 60% by weight of the filler(s) based on the weight of the resin.

By the phrase "wood primer composition" as used herein is meant a composition which, on application to timber or like porous material and photocatalytic curing of the resin in the composition, forms a hermetic surface serving as a basis for further surface treatment of the material.

Preferably, the primer composition includes further synthetic resin material which is compatible with the photocatalytically curable resin only when the latter is in its uncured state, so that when the photocatalytically curable synthetic resin is cured, said further synthetic resin material is precipitated in finely divided form.

By a photocatalytically curable liquid synthetic resin is meant a synthetic resin, for ex-

[Price 5s. 0d. (25p)]

ample a polyester resin, of the type which is liquid when uncured but when exposed to electromagnetic radiation of the appropriate wavelength (usually ultra-violet light) undergoes a curing reaction and becomes a hard impermeable solid.

According to another aspect of the invention there is provided a method of priming a surface of timber or like porous material comprising the steps of applying to the surface a primer composition according to the above aspect of the invention and thereafter curing the resin by exposing the surface to electromagnetic radiation of the appropriate wavelength to provide a non-porous layer of cured primer on said surface.

According to a further aspect of the invention there is provided a board of timber or like porous material having a surface covered by a layer of cured primer composition applied by the method of the aspect of the invention referred to in the preceding paragraph.

The filler may comprise any one or more of the following in finely-divided form; silicon dioxide, calcium carbonate, barium sulphate, talc, dolomite, kaolin, asbestos or like materials. Preferably, the filler comprises particles of not greater than one micron in size.

The primer composition may comprise between 10% and 60% by weight of the filler, and in the preferred embodiment comprises between 30% and 40% by weight of the filler.

In the uncured state of the resin the primer composition is liquid and is applied to the surfaces of timber boards and the like by a pouring machine. The treated surfaces are then exposed to catalytically active light to cure the resin. A large proportion of the catalytically active light passes directly through the mineral filler or is scattered thereby so that despite the high proportion of filler in the primer the resin cures completely and rapidly without the need for chemical curing agents and accelerators.

In a further embodiment of the invention the primer composition includes temporarily compatible synthetic resins, i.e. resins which are compatible with the liquid photocatalytically curable synthetic resin (i.e. which dissolve in the liquid resin) but are incompatible with the cured resin and are precipitated in a very finely divided form during the curing process and do not inhibit curing of the resin. Examples of such temporarily compatible resins which may be used are a vinyl resin an acrylic resin or a cellulose ester.

A layer 11 of cured primer composition is thus applied to the surface of a board 10 as shown in the drawing. The priming layer is then treated by grinding and a finishing layer of lacquer or the like 12 is applied to the primary layer.

As the primer composition is liquid in its uncured state it is easy to apply to the timber or like base and a relatively small amount of primer composition is required per unit area of the surface being treated.

It has been found that a primer composition according to the invention provides a priming layer on porous surfaces which has a smoother and more uniform surface texture than the priming layers provided by conventional primers. Also primer compositions according to the invention when cured are generally more durable, stick better to the timber or like base and stay smooth when the timber shrinks or swells. It has also been found that less grinding material is consumed in after-treatment of the primed surface.

WHAT WE CLAIM IS:—

1. A wood primer composition which comprises a photocatalytically curable liquid synthetic resin (as hereinbefore defined) having added thereto to one or more finely divided fillers effectively translucent to electromagnetic radiation of the wavelength required to catalyse curing of the resin.

2. A wood primer composition which comprises a photocatalytically curable liquid synthetic resin (as hereinbefore defined) having added thereto one or more finely divided fillers selected from the inorganic compounds silicon dioxide, calcium carbonate and barium sulphate and the minerals talc, dolomite, kaolin and asbestos, the composition comprising from 10% to 60% by weight of the filler(s), based on the weight of the resin.

3. A wood primer composition according to Claim 2, which comprises from 30% to 40% of the filler(s), based on the weight of the resin.

4. A wood primer composition according to Claim 2 or 3, wherein the or each filler comprises particles of not greater than one micron in size.

5. A wood primer composition according to any one of Claims 2, 3 or 4, which includes further synthetic resin material which is compatible with the photocatalytically curable resin only when the latter is in its uncured state, so that, when the photocatalytically curable synthetic resin is cured, said further synthetic resin material is precipitated in finely divided form.

6. A wood primer composition according to Claim 5, wherein said further synthetic resin material comprises a vinyl resin, an acrylic resin or a cellulose ester.

7. A method of priming a surface of timber or like porous material, which comprises the steps of applying to said surface a coating of a wood primer composition according to Claim 1, in its liquid state, and thereafter curing the photocatalytically curable liquid synthetic resin by exposing the coating to an electro-

magnetic radiation of the appropriate wavelength to provide a non-porous layer of cured primer composition on said surface.

8. A method of priming a surface of timber or like porous material, which comprises the steps of applying to said surface a coating of a wood primer composition according to any one of Claims 2 to 6, in its liquid state, and thereafter curing the photocatalytically curable liquid synthetic resin by exposing the coating to an electromagnetic radiation of the appropriate wavelength to provide a non-porous layer of cured primer composition on said surface.

9. A wood primer composition in accordance with Claim 1, substantially as hereinbefore described.

10. A method in accordance with Claim 7, of priming a surface of timber or like porous material, substantially as hereinbefore described.

11. A board of timber or like porous material having a surface covered by a layer of cured primer applied by the method of Claim 7, 8 or 10.

12. A board in accordance with Claim 11, of timber or like porous material having a priming layer substantially as hereinbefore described with reference to, and as shown in, the accompanying drawing.

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1209851 COMPLETE SPECIFICATION

1 SHEET *This drawing is a reproduction of the Original on a reduced scale*